REMARKS

This Amendment responds to the Office Action dated November 1, 2006 in which the Examiner rejected claims 41, 81-82 and 95-96 under 35 U.S.C. §112, second paragraph and rejected claims 41-57 and 81-106 under 35 U.S.C. §103.

As indicated above, claims 81, 82, 95 and 96 have been canceled without prejudice. Therefore, Applicants respectfully requests the Examiner withdraws the rejection to the claims under 35 U.S.C. §112, second paragraph.

Claims 41 and 104 claim a method of forming a coated optical element, the method using a mould having first and second mould sections that will form front and back surfaces of the optical element. One of the mould sections has a casting face, the method including the steps of: a) applying a first coating layer to cover the casting face of a mould section, the casting face being capable of imparting a desired optical configuration on a surface of the optical element, wherein the first coating layer is an abrasion resistant coating layer; b) treating the first coating layer to prevent damage to the first coating layer during subsequent steps; c) applying a second coating layer to the first coating layer to substantially cover the first coating layer; d) treating the second coating layer to provide at least weak adhesion of the second coating layer to the first coating layer and to prevent damage to the second layer during subsequent steps; e) filling the mould with an organic liquid material; and f) hardening the organic liquid material so as to form the optical element adhered to the second coating layer. In claim 41 the first coating layer is an abrasive resistant coating layer comprising polysiloxane resin. The second coating layer is an intermediate coating layer comprising a (meth)acryl silane, and the (meth)acryl silane, the organic liquid material and the abrasive resistant coating layer co-react to

form the coated optical element. In claim 104, the hardening comprises co-reacting the second layer, the organic liquid material and the first coating layer. The second coating layer is between and in contact with the organic liquid material and the first coating layer to provide adhesion between the organic liquid material and the first coating layer.

Through the method of the claimed invention applying a first coating layer to cover a casting face, treating the first coating layer, applying a second coating layer to the first coating layer and treating the second coating layer prior to filling the mold and hardening the material filled in the mold, as claimed in claims 41 and 104, the claimed invention provides a method of forming a coated optical element with improved adhesion between the lens and the hard coat layer. The present invention provides a method for in mould coating lenses with commercially superior hard coatings, such as polysiloxane coatings. This has been made possible with the use of an intermediate coating layer that co-reacts with the lens organic liquid material and the hard coating material. The prior art does not show, teach or suggest the invention as claimed in claims 41 and 104.

Claims 104 and 105 were rejected under 35 U.S.C. §103 as being unpatentable over *Sandvig et al.* (EP 0 102 847) in view of *Nestell et al.* (U.S. Patent 6,000,814).

Applicants respectfully traverse the Examiner's rejection of the claims under 35 U.S.C. §103. The claims have been reviewed in light of the Office Action, and for reasons which will be set forth below, Applicants respectfully request the Examiner withdraws the rejection to the claims and allows the claims to issue.

Sandvig et al. appears to disclose the coating composition may be applied to one or more of the mold surfaces by a variety of techniques including spraying, dipping, brushing, flow coating, spin coating and the like. (Page 5, lines 26-29). The coating is then reacted to a degree that it forms a dry film on the mold which exactly replicates the mold face in an aberration-free manner. (Page 6, lines 15-17). After being partially reacted, the coating is dry, although it may be tacky to the touch. Additionally, the coating will not flow by itself although it can be deformed by touching it with finger pressure. Furthermore, the coating is not abrasion-resistant at this point. (Page 7, lines 6-10). After the desired level of reaction is obtained, the mold is assembled and filled with liquid organic material to provide the substrate. (Page 7, lines 31-33).

Thus, *Sandvig et al.* merely discloses applying a coating composition to one or more mold surfaces. Nothing in *Sandvig et al.* shows, teaches or suggests providing a second coating and treating the second coating as claimed in claim 104.

Sandvig et al. discloses the formation of an abrasion resistant layer on a lens by in-mould coating. *Sandvig et al.* uses an abrasion resistant coating formed from a material having reactive ethylenically unsaturated groups (page 4, lines 27-28). *Sandvig et al.* only discloses the use of CR-39 as the lens material. SR-39 has free double bonds suitable for co-reaction with the double bonds of the abrasion resistant coating material. Thus, *Sandvig et al.* discloses formation of an acrylate hard coat directly on a CR-39 lens material. There is no teaching or suggestion in *Sandvig et al.* that an intermediate layer is required, presumably because co-reaction between the double bonds in the lens material and the abrasion resistant coating material provides for adequate adhesion.

Nestell et al. appears to disclose vehicle component assemblies including vehicle exterior lighting assemblies such as a composite headlamp assembly incorporating a hard coated polycarbonate lens element bonded to a molded polymeric gasket. (Column 1, lines 8-12). Notably, lens module 23 may comprise a pre-coated, pre-formed lens in which protective coating 27a has been applied using conventional techniques by the manufacturer. For example, protective coating 27a may be applied using in-molding techniques, chemical vapor deposition (CVD) techniques, for example low pressure or plasma enhanced CVD vacuum deposition techniques, such as evaporation or sputtering, or film transfer techniques, or the like. (Column 7, lines 55-63). Moreover, lens module 23 may be formed by a unitary molding operation in which lens 24 is molded from resin molded material and with the protective coating and any intermediate primer coatings being in-mold applied in the same mold, such as by use of transfer film, in-mold coating, a co-injection process, or the like. As these molding methods are conventionally known in the molding art, reference is made thereto without further description of the processes involved. Optionally, the molded member can be co-injected in a unitary molding process or may be molded in an adjacent operation immediately subsequently following the lens molding process. Whether lens 23 comprises a pre-formed, pre-coated lens, a pre-formed, uncoated lens, or a lens formed in a mold with the protective coating or coatings and gasket formed in the same mold, the final product comprises a lens module with an integrally formed molded member. (Column 8, lines 13-29).

Thus, *Nestell et al.* merely discloses applying a protective coating 27a using in-molding techniques, chemical deposition techniques or plasma enhanced CVD

vacuum deposition techniques. Nothing in *Nestell et al.* shows, teaches or suggests applying a second coating layer to the first coating layer and treating the second coating layer to provide at least weak adhesion and to prevent damage to the second coating layer as claimed in claims 104. Rather, *Nestell et al.* merely discloses layers 27. Other than a mere suggestion of in-mould coating, there is no enabling disclosure in *Nestell et al.* of how such a process is carried out. Furthermore, *Nestell et al.* only discloses the use of polycarbonate lens materials. The skilled person understands that it is difficult to form coated polycarbonate materials by in-mould coating. This is because polycarbonate is a thermoplastic and it is generally difficult to control the cure of these materials. The skilled person understands that control of curing is important in in-mould coating processes.

Furthermore, *Nestell et al.* provides littler detail of the primer coating 27d. At column 6, lines 34-35, reference is made to an "acrylic based primer". However, there is no enabling disclosure of the use of such a layer. There is no suggestion in *Nestell et al.* that an "acrylic based primer" is able to co-react with the lens material and protecting coating 27d.

The *Nestell et al.* document is solely directed to the formation of vehicle headlamp assemblies (International Class F21V). In contrast, the *Sandvig et al.* document is directed to the formation of ophthalmic lenses (International Class G02B). The skilled person would not consider the *Nestell et al.* document relevant. Assuming arguendo that the references could be combined, the combination of *Sandvig et al.* and *Nestell et al.* would merely suggest to provide *Sandvig et al.* with layers 27 of *Nestell et al.* Thus nothing in the combination of the references shows, teaches or suggests treating the second coating layer to provide at least weak

adhesion and to prevent damage as claimed in claim 104. Applicant submits that there is no motivation for the skilled person to combine the disclosures of *Sandvig et al.* and *Nestell et al.* because they are in different fields and the chemistry of the materials is different in each case. Furthermore, there is no teaching in either document alone or in combination to use an intermediate coating layer that co-reacts with the lens material and the abrasion resistant coating layer. Therefore, Applicants respectfully request the Examiner withdraws the rejection to claim 104 under 35 U.S.C. §103.

Claim 105 depends from claim 104 and recites additional features. Applicants respectfully submit that claim 105 would not have been obvious within the meaning of 35 U.S.C. 103 over *Sandvig et al.* and *Nestell et al.* at least for the reasons as set forth above. Therefore, Applicants respectfully request the Examiner withdraws the rejection to claim 105 under 35 U.S.C. §103.

Claims 41-57, 83-85, 88-94, 97-98, 103, 105 and 106 were rejected under 35 U.S.C. §103 as being unpatentable over *Sandvig et al.* in view of *Nestell et al.* and *Konishi et al.* (U.S. Patent 5,462,806).

Applicants respectfully traverse the Examiner's rejection of the claims under 35 U.S.C. §103. The claims have been reviewed in light of the Office Action, and for reasons which will be set forth below, Applicants respectfully request the Examiner withdraws the rejection to the claims and allows the claims to issue.

As discussed above, nothing in *Sandvig et al.* shows, teaches or suggests applying a second coating layer to a first coating layer and treating the second coating layer to provide at least weak adhesion and to prevent damage to the second layer as claimed in claim 41. *Sandvig et al.* discloses formation of an

acrylate hard coat directly on a CR-39 lens material. There is no teaching or suggestion in *Sandvig et al.* that an intermediate layer is required, presumably because co-reaction between the double bonds in the lens material and the abrasion resistant coating material provides for adequate adhesion.

Additionally, as discussed above, *Nestell et al.* merely discloses layers 27, but does not show, teach or suggest treating the second coating layer to provide at least weak adhesion and to prevent damage thereto as claimed in claim 41. Other than a mere suggestion of in-mould coating, there is no enabling disclosure in *Nestell et al.* of how such a process is carried out. Furthermore, *Nestell et al.* only discloses the use of polycarbonate lens materials. The skilled person understands that it is difficult to form coated polycarbonate materials by in-mould coating. This is because polycarbonate is a thermoplastic and it is generally difficult to control the cure of these materials. The skilled person understands that control of curing is important in in-mould coating processes.

Nestell et al. provides littler detail of the primer coating 27d. At column 6, lines 34-35, reference is made to an "acrylic based primer". However, there is no enabling disclosure of the use of such a layer. There is no suggestion in *Nestell et al.* that an "acrylic based primer" is able to co-react with the lens material and protecting coating 27d.

Konishi et al. appears to disclose a plastic lens which is excellent in adhesiveness of coated films, scratch resistance, impact resistance, resistance to chemicals, weather resistance and reflection preventing property. (Column 1, lines 44-48). A plastic lens comprises a plastic lens base material having provided on at least one surface thereof a primer layer and a hard coat layer in this order. (Column

1, lines 53-55). The primer layer comprises a polyurethane resin containing at least one organosilicon compound represented by the general formula (I) or a hydrolyzate thereof. (Column 2, lines 10-12). The primer layer is an impact absorbing layer formed on at least one surface of the plastic lens base material comprises a resin containing the compound A, and, therefore, when a hard coat layer as a scratch resistant layer is laminated on the surface of the primer layer, the impact resistance of the plastic lens can be improved without adversely affecting the scratch resistance of the hard coat layer. (Column 2, lines 19-26). In producing the plastic lens, at least one surface of the plastic lens base material is coated with a primer coating material comprising a resin having added thereto a compound A for forming a primer layer which functions as an impact absorbing layer, and the coated base is then subjected to a curing treatment. (Column 7, lines 22-27).

Thus, *Konishi et al.* merely discloses a method of using a pre-formed lens which is then coated with a primer layer. In other words, *Konishi et al.* is directed to a different technical field using a pre-form lens and is not directed to an in-mold process as claimed in claim 41.

A combination of *Nestell et al.*, *Sandvig et al.* and *Konishi et al.* would not be possible since *Nestell et al.*, *Sandvig et al.*, and *Konishi et al.* are directed to different technical fields, i.e., *Sandvig et al.* is directed to formation of ophthalmic lenses, *Nestell et al.* is solely directed to the formation of vehicle head lamp assemblies, and *Konishi et al.* is directed to using pre-formed lens. Applicant submits that there is no motivation for the skilled person to combine the disclosures of *Sandvig et al.* and *Nestell et al.* because they are in different fields of the chemistry and the materials is different in each case. Furthermore, there is no teaching in either document alone or

in combination to use an intermediate coating layer that co-reacts with the lens material and the abrasion resistant coating layer. Even assuming arguendo that the references could be combined, the combination would merely suggest to replace the single coating of *Sandvig et al.* with the coatings 27 of *Nestell et al.*, and after the lens is formed, apply a primer layer as taught by *Konishi et al.*. Thus nothing the combination of the references shows, teaches or suggests treating a second coating layer to provide at least weak adhesion and to prevent damage thereto as claimed in claim 41. Therefore, Applicants respectfully request the Examiner withdraws the rejection to claim 41 under 35 U.S.C. §103.

Claims 42-57, 83-85, 88-94, 97-98, 102, 103 and 106 recite additional features. Applicants respectfully submit that claims 42-57, 83-85, 88-94, 97-98, 102, 103 and 106 would not have been obvious within the meaning of 35 U.S.C. §103 over *Sandvig et al.*, *Nestell et al.* and *Konishi et al.* at least for the reasons as set forth above. Therefore, Applicants respectfully request the Examiner withdraws the rejection to claims 42-57, 83-85, 88-94, 97-98, 102, 103 and 106.

Claims 81 and 82 were rejected under 35 U.S.C. §103 as being unpatentable over *Sandvig et al.* in view of *Nestell et al.* and *Konishi et al.* and further in view of *Soane et al.* (U.S. Patent 5,733,483). Claims 86-87 and 95-96 were rejected under 35 U.S.C. §103 as being unpatentable over *Sandvig et al.* in view of *Nestell et al.* and *Konishi et al.* and further in view of *Singh et al.* (U.S. Patent 5,204,126). Claims 99-101 were rejected under 35 U.S.C. §103 as being unpatentable over *Sandvig et al.* in view of *Nestell et al.* and *Konishi et al.* and further in view of *Takamizawa et al.* (U.S. Patent 5,096,626).

Applicants respectfully traverse the Examiner's rejection of the claims under 35 U.S.C. §103. The claims have been reviewed in light of the Office Action, and for reasons which will be set forth below, Applicants respectfully request the Examiner withdraws the rejection to the claims and allows the claims to issue.

As discussed above, since nothing in the combination of *Sandvig et al.*, *Nestell et al.* and *Konishi et al.* show, teach or suggest the primary features as claimed in claim 41, Applicants respectfully submit that the combination of the primary references with the secondary references to *Soane et al.*, *Singh et al.* or *Takamizawa et al.* would not overcome the deficiencies of the primary references. Therefore, Applicants respectfully request the Examiner withdraws the rejection to claims 81-82, 86-87, 95, 96 and 99-101.

Thus it now appears that the application is in condition for reconsideration and allowance. Reconsideration and allowance at an early date are respectfully requested.

If for any reason the Examiner feels that the application is not now in condition for allowance, the Examiner is requested to contact, by telephone, the Applicants' undersigned attorney at the indicated telephone number to arrange for an interview to expedite the disposition of this case.

In the event that this paper is not timely filed within the currently set shortened statutory period, Applicants respectfully petition for an appropriate extension of time. The fees for such extension of time may be charged to Deposit Account No. 02-4800.

In the event that any additional fees are due with this paper, please charge our Deposit Account No. 02-4800.

Respectfully submitted,

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